CENTER FOR MANAGEMENT AND
ORGANIZATIONAL RESEARCH

RESEARCH DIVISION

COLLEGE OF BUSINESS ADMINISTRATION

UNIVERSITY OF SOUTH CAROLINA
COLUMBIA, SOUTH CAROLINA 29208

AN ANALYSIS OF FEMALE MARINE

RECRUIT ATTRITION

William H. Mobley
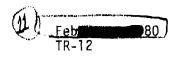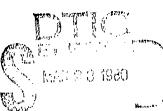Stuart A. Youngblood
Bruce M. Meglino
Dorothy P. Moore

TR-12

Center for Management and Organizational Research
College of Business Administration
University of South Carolina
Columbia, S. C.   29208

Feb 80
TR-12

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Tr-12	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) An Analysis of Female Marine Recruit Attrition		5. TYPE OF REPORT & PERIOD COVERED Technical Report
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) William H. Mobley, Stuart A. Youngblood, Bruce M. Meglino and Dorothy P. Moore.		8. CONTRACT OR GRANT NUMBER(s) N000-14-76-C-0938
9. PERFORMING ORGANIZATION NAME AND ADDRESS Center for Management and Organizational Research College of Business Administration University of South Carolina, Columbia, SC 29208		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS NR 170-819
11. CONTROLLING OFFICE NAME AND ADDRESS Organizational Effectiveness Research (Code 452) Office of Naval Research Arlington, VA 22217		12. REPORT DATE February 1980
		13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS(If different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Supported by Office of Naval Research Manpower R & D Program.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Attrition	Leadership	Behavioral Intentions	Age
Attitudes	Group Climate	Roles	Recruit Training
Expectations	Job Content	Values	Race
Females	Longitudinal	Education	Attraction
Satisfaction	Generalizability	Mental Grade	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

1977 and 1978 cohorts of female Marine Corps recruits were analyzed in terms of correlates of recruit training attrition. Intentions to complete and difference in Marine and civilian role force were among the variables predictive of recruit training attrition. Self reported and administrative reasons for attrition, changes in expectations and perceptions over recruit training, and comparison with previously reported male cohorts are presented.

DD FORM 1473 1 JAN 73   EDITION OF 1 NOV 65 IS OBSOLETE
S/N 0102-014-6601

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

ACKNOWLEDGEMENTS

AN ANALYSIS OF FEMALE MARINE RECRUIT ATTRITION

MANAGEMENT SUMMARY

What Is The Purpose Of The Study?

Attrition among first term enlisted personnel has risen in recent years. This fact, combined with a declining population in the primary recruiting age group, increased technical requirements, and the cost of attrition, dictate that a better understanding of the causes and costs of attrition be developed and counter-attrition strategies be evaluated. The USC research program, of which this report is one part, seeks to contribute to this effort.

Previous reports in this series have dealt exclusively with male enlistees. Since females are being increasingly utilized in the military, analyses of female attrition is warranted. The present report focuses on the recruit training attrition among female Marine Corps recruits who entered the military in August of 1977 and February of 1978.

How Was The Study Conducted?

Recruits were asked to complete a survey after they arrived at their recruit training location but before the actual start of training (pre-training survey) and again just prior to graduation (post-training survey). Individuals who left the Marine Corps during training were also given a survey (out-placement survey). The survey included measures of expectations, values, attraction for both the Marine and civilian roles, leadership, job content, group, satisfaction, and internal movivation. Demographic

information was obtained on individuals through the Marine Corps Recruit Accession Management System (RAMS) file.

What Work Role Outcomes Were Most and Least Desirable?

Prior to the start of recruit training, the female recruits were asked to rate 50 work role outcomes in terms of their desirability or undesirability. The most desirable outcomes included: learning new skills; an organization that keeps its promises; a job which gives me pride in myself; good insurance, medical, and financial benefits, and an exciting job. The least desirable outcomes included: a repetitive job with little responsibility; working closely with people who use drugs; a job involving physical violence; interference with marriage and family plans; and long separations from home and family.

How Did Graduates Differ From Attrites?

Female recruit training graduates and attrites were compared on the measures they completed prior to the start of recruit training. The pre-training measures which significantly differentiated female graduates from attrites included: intention to complete the enlistment (lower for attrites) and the difference between the military and civilian role forces (lower for attrites). Additionally, attrites exhibited higher expected leader consideration, lower growth need strength, and lower expected job autonomy. None of the demographic variables significantly differentiated attrites from graduates, perhaps due to the relatively low variance in these variables.

When the variables were subjected to a stepwise multiple regression analysis, the significant variables were expected leader consideration (attrites higher), job autonomy (attrites lower), skill variety (attrites

higher), growth need strength (attrites lower), and intention to complete the enlistment (attrites lower).

When hierarchical regression analysis was performed, it was found that the process model of attrition among females differed from that previously reported for males. Expected job skill variety, expected autonomy, expected leader consideration, and growth need strength were significant contributors to the overall female attrition prediction equation.

What Were the Reasons for Attrition?

The recruit training attrition rate for the females surveyed was 14.9%. The primary self-reported reasons for attrition were: lack of personal freedom, too much pressure, missed family and friends, rules and regulation too rigid. The major administratively recorded reasons for "unsuitability-personality" and "unsuitability-apathy, defective attitude, inability to expend effort constructively".

What Changes Were Observed During Recruit Training?

Changes during recruit training were examined for graduates (pre-training vs. post training survey) and for attrites (pre-training vs. outplacement survey). For the graduates, there were significant increases in intention to reenlist, chances of completing the enlistment and finding an acceptable civilian job, role attraction and role force for both military and civilian roles, leader consideration, unit proficiency, and growth need strength. Graduates also reported a significant decrease in skill variety.

The attrites exhibited a significant increase in perceived chances of finding an acceptable civilian job, and a significant decrease in military role force and attraction, leader consideration, skill variety, task significance, feedback from the job, satisfaction, unit attraction and proficiency.

What are the Implications of the Results?

The recruiting effort might benefit by studying the outcome desirability ratings since they indicate what recruits, prior to recruit training. value in a work role. Since intentions to complete the enlistment, expected leader consideration, expected job content, and growth need strength, as measured prior to recruit training, differentiate subsequent graduates and attrites, such variables may be useful in selection, counseling, and early recruit training processes. We continue to believe that realistic job previews can be one useful strategy, at <u>both</u> the recruiting and recruit training stages, for providing: accurate expectations (of e.g., leader style, job content, etc.), value clarification, coping skills, and credible role models (see Horner, et al., 1979). Further, identifying individuals with low predicted retention early in the process may provide an opportunity for coaching and counseling prior to actual recruit training. Finally, the outcome desirability, expectancy, and composite measures, along with the reasons for attrition data, should be useful to personnel policy and practice managers in designing a military role with greater attraction relative to the civilian role.

AN ANALYSIS OF FEMALE MARINE RECRUIT ATTRITION

This report presents an analysis of female recruit training attrition for two (1977 and 1978) U. S. Marine Corps cohorts. The analyses reported here represent a portion of a longitudinal study of individual and organizational causes and correlates of attrition among first term enlisted personnel. Earlier reports have dealt with pre-training values, expectations and intentions for a 1976 sample of Parris Island male recruits (Mobley, Hand, Logan, & Baker, 1977); an analysis of recruit training attrition for this sample (Mobley, Hand, & Logan, 1977; Mobley, Hand, Baker, & Meglino, 1978); a cross sectional analysis of this sample at advanced training and initial duty station (Griffeth, Meglino, Youngblood, & Mobley, 1979); and a cross-sectional and generalizability analysis among the 1976, 1977, and 1978 male cohorts from Parris Island and San Diego (Youngblood, Meglino, Mobley & Moore, 1980). The present report analyzes correlates of recruit training attrition among female enlisted personnel who entered Parris Island in August of 1977 and February of 1978. Since support for this study was obtained through developmental funds, this report is primarily directed toward the manpower community. Subsequent manuscripts will address concerns of the basic research community.

Problem

Attrition among first term enlisted military personnel is a problem of justifiable concern. Declining numbers of citizens in the primary recruiting age groups, an economy providing alternative employment opportunities, and

increasingly technologically sophisticated military manpower requirements serve to under-score the nature of the problem. (See e.g., Matthews, 1977; Sinaiko, 1977; Wharton EFA, 1979). Pre-end of active obligated service (EAOS) attrition places additional burden on the recruiting function which is already dealing with a diminished labor market. Pre-EAOS attrition represents a significant cost to the military (see e.g., Huck and Midlam, 1977) and a potentially significant cost to individuals who attrite (leave the organization). This does not imply that all attrition is bad. Attrition of certain individuals at certain times may be desirable from cost-effectiveness, unit-effectiveness, and individual perspectives.

Research on military attrition reviewed elsewhere (Hand, Griffeth, and Mobley, 1977) indicated that miliatry attrition research: has placed relatively more emphasis on reenlistment than pre-EAOS attrition; has placed relatively more emphasis on individual variables (e.g., education, mental grade, etc.) than on organizational variables; has infrequently analyzed the possible joint or interactive contribution to attrition of individual and organizational variables; has infrequently utilized longitudinal designs; and has infrequently used experimental designs. Also, it should be noted that the shift to the volunteer concept raises issues of generalizability of pre-1973 research.

The present research program seeks to assess the contribution of individual and organizational variables to pre-EAOS attrition using multivariate analyses, a longitudinal design, and samples of enlistees recruited after the 1973 shift to an all volunteer military.

Increased utilization of females is one of several strategies for satisfying military manpower requirements. Thus, it is important to focus on the causes and correlates of female attrition and to compare the attrition process for males and females.

General Model

The general model serving as a basis for this study is a role choice model. (See Figure 1). This model is a variant of the generalized expectancy model of organizational behavior (Vroom, 1964; Campbell, Dunnette, Lawler, and Weick, 1970; Dachler and Mobley, 1973; Lawler, 1973). For reviews of the expectancy model, see Locke (1975) and Mitchell (1974). See Graen (1976) for a discussion of role processes, and Wiskoff (1977) for a multinational review of military career expectation research.

The role choice model used here addresses the following kinds of questions. Why do individuals choose a military role (in the present case an enlisted Marine Corps role) as opposed to a civilian role? Why do individuals choose to engage in effective role behavior (in the present case behavior which will not lead to pre-EAOS discharge)? Why do individuals choose to reenlist or not reenlist?

The model suggests that role choice can, in part, be understood and predicted by knowledge of:

a) The value individuals place on various role outcomes or consequences, e.g., pay, learning new skills, travel, etc.;

b) the individual's perceived expectancy that a given role will or will not lead to these various outcomes or consequences; i.e., role-outcome expectancy;

c) the individual's expectancy regarding being able to attain the role, i.e., role expectancy, e.g., perceived chances of finding an acceptable civilian role or perceived chances of being a "successful" Marine.

As will be described in the measures sections of this report these variables can be combined in various ways to generate, for each individual, role

FIGURE 1

A GENERALIZED MODEL OF MARINE
ROLE ATTRACTION

PERCEIVED CHANCES
OF ATTAINING OUTCOMES GIVEN
VARIOUS ROLES

PERCEIVED CHANCES
OF ATTAINING
RETAINING ROLE

ROLE OUTCOMES

E.G. ● PAY
● WORKING CONDITIONS
● SKILL DEVELOPMENT
● ETC.

INDIVIDUAL OUTCOME PREFERENCES

● EDUCATION
● SOCIO-ECON-STATUS
● ABILITY

MARINE ROLE(S)

CIVILIAN ROLE(S)

● LEADERSHIP
● GROUP CLIMATE
● JOB-TASK
● POLICIES
● PRACTICES

INDIVIDUAL "MOTIVATION"

● TO JOIN
● TO STAY
● TO BE EFFECTIVE
● TO LEAVE

● ECONOMY
● EDUCATION
● ABILITY

attraction indexes for both civilian and Marine roles. The individual variables and the various composite role attraction indexes can then be evaluated as correlates of attrition.

Since the model is a choice model, it is important to assess the individual's perceptions of both the Marine role and alternative (civilian) roles. An individual's withdrawal from the Marine Corps may be related to more than simply his/her perception and evaluation of the Marine Corps role. Such withdrawal also may be related to the desirability and availability of alternative non-military roles as evaluated by the individual. The present research assess and tracks the individual's attraction to both the military and civilian roles.

Individual level variables such as education, age, mental grade, etc., have been shown to be related to pre-EAOS attrition (Matthews, 1977; Lockman, 1975; Sands, 1976). In the present research program, such individual level variables as age, education, mental grade, and marital status are analyzed in terms of their relation to: values, expectancies, and role attraction; changes in values, expectancies, and role attraction; perceived organizational variables; and to attrition either directly or in combination with other individual and organizational variables.

Based in part on the Mobley, Griffeth, Hand, and Meglino (1979), Hand, et al. (1977), and Porter and Steers(1973) reviews of variables related to withdrawal (attrition) behavior, the study includes measures of leadership, job content, and group climate. These organizational variables, as perceived by the individual, are assessed in terms of their direct relationship to attrition and to the various components of the role choice model.

It is assumed that outcome values, role-outcome expectancies, and role expectancies are learned and are modified by experience. One advantage of

the longitudinal design is that it affords the opportunity to track the learning-socialization process.

Summarizing the basic role model:

a) it is a choice model which considers perceptions and evaluations of both the Marine role and alternative civilian roles:

b) it considers both individual and organizational variables;

c) combined with a longitudinal design, it permits assessment of the learning-socialization process.

It is believed that use of this conceptual model will contribute not only to prediction of attrition from individual and organizational variables, but also to the understanding of the attrition process.

The Present Report

This report examines recruit training attrition among 1977 and 1978 cohorts of female recruits. The generalizability of results previously obtained for samples of male Marine Corps recruits from 1976, 1977, and 1978 also are examined. The results for the male analyses, summarized in an earlier technical report in this series (Youngblood, et al., 1980), found a number of significant pre-recruit training differences between subsequent recruit training graduates and attrites. These differences were in the areas of intentions, role expectations, role attraction, expected leadership, expected job content, expectations regarding an individual's group and, expected overall satisfaction. Differences on these measures were also found between pre and post-training measures for graduates and between pre and out-placement measures for attrites. Regression analyses were also reported that examined the prediction of recruit training attrition from pre-training survey and demographic information. The comparability of

regression results across male cohorts was also reported (Youngblood, et al., 1980).

Since the previous report examined attrition for only male recruit chorts, similiar analyses for female recruits are warranted. The present report examines the results of these analyses for female recruits sampled in 1977 and 1978.

Method

Basic Design

The basic longitudinal design is summarized in Figure 2. Survey measures were administered at the beginning of recruit training (pre-training measure), again at the end of recruit training (post-training measure), or at the time of recruit training attrition (out-placement measure). (Additional measures were given near the end of advanced training and at subsequent duty station for the 1976 primary longitudinal cohort.)

The portion of the longitudnal study reported here deals with the pre-training measure administered at the beginning of recruit training (Phase I), the post-training measure (Phase II), the out-placement measure, and demographic data from the Marine Corps Recruit Accession Management System (RAMS) file.

Sample

Table 1 summarizes the recruit cohorts in the total study. Table 2 reports the sample size and recruit training attrition in each cohort. The two cohorts of primary interest in the present report are the female recruits who entered Parris Island in August of 1977 and February of 1978. The Marine Corps conducts all recruit training for females at the Parris Island Recruit Depot, thus, there are no San Diego female samples.

FIGURE 2

BASIC LONGITUDINAL DESIGN

PHASE   I   II   III   IV

ACTIVITY

BASIC TRAINING — ATTRITION

TECHNICAL SCHOOLS — ATTRITION

ON THE JOB TRAINING — ATTRITION

FIELD TRAINING — ATTRITION

DUTY STATIONS — ATTRITION

○ —ADMINISTRATION OF SURVEY INSTRUMENTS

TABLE 1

RECRUIT COHORTS BY DATE OF ACCESSION, LOCATION, AND SEX

August, 1976	Male Recruits, Parris Island (Primary longitudinal cohort)
July, 1977	Male Recruits, Parris Island (Temporal generalizability analysis)
July, 1977	Male Recruits, San Diego (Temporal and location generalizability analysis)
*August, 1977	Female Recruits, Parris Island (Sex generalizability analysis)
January, 1978	Male Recruits, San Diego (Temporal and location generalizability analysis)
*February, 1978	Female Recruits, Parris Island (Sex generalizability analysis)
April, 1978	Male Recruits, Parris Island (PIRATE realistic job preview experimental sample)

*Focus of the present report.

TABLE 2

SAMPLE SIZES AND RECRUIT TRAINING ATTRITION BY COHORT

Cohort	Total Sample[a] N	Attrite During Recruit Training N	Attrite During Recruit Training %
August 1976 Parris Island Males	1520	176	12
July 1977 Parris Island Males	482	47	10
July 1977 San Diego Males	480	31	6
*August 1977 Parris Island Females	85	16	19
January 1978 San Diego Males	381	52	12
*February 1978 Parris Island Females	90	10	11
April 1978 Parris Island Males (PIRATE)	678[b]	93	14

Source: M79-1

[a]Sample size based on number of recruits who were non-reservists with matched RAMS demographic data and survey data with three or less consistency errors on the pre-recruit training survey.

[b]The PIRATE cohort was used to experimentally test a realistic job preview. Different survey measures were used for this experiment (see Horner, Mobley, & Meglino, 1979)

*Focus of the present report.

Measures

The measures used in this study are summarized in Figure 3. The individual level variables of age, mental score, education, race, marital status, and number of dependents were collected from the RAMS computer file.

The component measures of the role choice model were collected via survey. These components include the following:

a) Enlisted personnel were presented a list of 50 <u>role outcomes</u> and asked to rate them on a +2 to -2 scale of desirability - undesirability. The role outcomes, generated from previous research, interviews, and pilot tests, included such things as "learning career skills," "separation from family," "Responsibility," etc. The term "outcome" refers to rewards, costs, and conditions possibly associated with a job or role.

b) <u>Role-outcome expectancies</u>: <u>Marine</u>: for each of the 50 role outcomes, enlisted personnel were asked to rate, on a scale of 0 to 1.0, their chances of attaining that outcome by being a Marine.

c) <u>Role-outcome expectancies</u>: <u>Civilian</u>: for each of the 50 role outcomes, enlisted personnel were asked to rate, on a scale of 0 to 1.0, their chances of attaining that outcome by being in a civilian job.

d) <u>Role-expectancy</u>: <u>Marine</u>: enlisted personnel were asked to rate their chances of successfully completing their first term enlistment on a scale of 0 to 1.0.

e) <u>Role-expectancy</u>: <u>Civilian</u>: enlisted personnel were asked to rate their chances of finding an acceptable civilian job at the present time if that were their goal, on a scale of 0 to 1.0.

Based on these component ratings, several composite index variables were generated for each individual.

f) <u>Role attraction</u>: <u>Marine</u>: is the sum of the cross-products of the desirability ratings of the 50 role outcomes and Marine role-outcome expectancy ratings.

g) <u>Role attraction</u>: <u>Civilian</u>: is the sum of the cross-products of the desirability ratings of the 50 role outcome and civilian role-outcome expectancy ratings.

h) <u>Role Force</u>: <u>Marine</u>: is the Marine role attraction index above

12

Figure 3

MEASURES

INDIVIDUAL

- AGE
- MENTAL GRADE
- EDUCATION
- RACE
- DEPENDENTS
- ROLE ATTRACTION-MARINE
- ROLE ATTRACTION-CIVILIAN

ORGANIZATIONAL

- LEADERSHIP (LBDQ)
  - CONSIDERATION
  - STRUCTURE
- GROUP (GDDQ)
  - HOMOGENEITY
  - PERMEABILITY
  - STABILITY
  - HEDONIC TONE
  - PLUS 9 OTHER DIMENSIONS
- JOB (JDS)
  - SKILL VARIETY
  - TASK SIGNIFICANCE
  - FEEDBACK
  - PLUS 7 OTHER DIMENSIONS

CRITERIA

- INTENTIONS
  - EAOS
  - RE-ENLISTMENT
- PRE-EAOS ATTRITION
  - ADMINISTRATIVE REASONS
  - SELF-REPORT REASONS
- PERFORMANCE
  - SELF-REPORT
  - MASTER FILE
  - INDIVIDUAL RECRUIT TRAINING PERFORMANCE

weighted by expectancy of successfully completing the first term enlistment.

i) Role Force: Civilian: is the civilian role attraction index above, weighted by expectancy of finding an acceptable civilian job.

The organizational level variables, as perceived by enlisted personnel, were assessed with standardized survey measures. The Leader Behavior Description Questionnaire (Stogdill and Coons, 1957) assesses perceived leader "Consideration" and "Initiating Structure." Two group sociometric measures, attraction and proficiency (Libo, 1953), also were included. The short version of Job Diagnostic Survey (JDS) (Hackman and Oldham, 1974, 1975) was also used. The JDS assesses various dimensions of the perceived job content, e.g., skill variety, task significance, feedback, task identity, task autonomy from the job. This measure also includes job satisfaction scales and individual level measures of internal motivation and growth need or the desire to obtain growth satisfaction from one's work. A complete list and definitions of the dimensions of the organizational measures is given in the Appendix of an earlier report (Mobley, et al., 1977).

In the pre-recruit training administration of the survey, respondents were instructed to respond to the leadership, group, and job content measures in terms of what they expected (since they had not yet been exposed to military life). Administration of subsequent surveys called for a descriptive rather than expected response set.

Criteria data collected on all surveys included behavioral intentions to complete first term enlistment, behavioral intentions to reenlist, and performance goals. For attrites, self reported ratings of their reasons for attrition were included. Criteria data collected from the Marine Corps Headquarters master file included administrative reasons for attrition and re-cycle information.

Procedure

The survey measures were pilot tested twice: first using enlisted
personnel assigned to the University of South Carolina NROTC unit and second,
using a platoon of July, 1976 Parris Island recruits. Based on the pilot
tests, instructions were clarified, ambiguous items were clarified or
deleted, minimal variance items were deleted, and several new questions
were added based on suggestions of pilot study subjects.

The pre-training measures were administered as a part of administrative
processing during the first few days after arrival at the recruit depot.
The survey was administered by the University researchers to groups of two
platoons at a time. Recruits were read the appropriate freedom of information
passage (which was also included in the survey booklet); informed that
participation was voluntary; and that individual responses were confidential.
Survey responses were made on machine readable answer sheets. ID numbers
were requested for the purpose of matching subsequent administrations of
the survey and matching with the RAMS and master file. All officers, non-
commissioned officers, and drill instructors remained out of the room during
administration of the survey.

The post-training measure was administered during the week of graduation
and in the same manner as the pre-training measure. Re-cycled recruits who
did not graduate with their original platoon were given the post-training
measure on an individual basis during the week of their graduation if they
graduated within four weeks after their original platton. Attrites were
given the out-placement survey in the few days
before their separation. The same survey was used for pre-training, post-
training, and out-placement, with the exception that the out-placement
survey included additional questions on self-reported reasons for attrition.

Results

An earlier report (Mobley, et al., 1978) addressed significant dif-
ferences between graduates and attitudes both prior to training, and at the
time of either graduation or attrition in the primary 1976 male cohort. A
subsequent report (Youngblood, et al., 1980) focused upon the generalizability
of such results across the four separate male samples. The present report
provides a descriptive analysis of the two female cohorts and a comparison
of male and female results in terms of the attrition process model.

Demographic and Attrition Comparisons

Table 3 provides a demographic description and comparison of the 1977
and 1978 female cohorts. The 1978 sample was significantly older and had
significantly more minorities. For the other demographic variables the two
samples were not statistically different. The relatively high level of
education in both samples reflects the high school graduation requirement
for female Marine recruits.

The recruit training attrition rates for the 1977 and 1978 female cohorts
were 18.8% and 11.1% respectively. The chi-square test of attrition by year
indicated a non-significant relation.

Pre-Recruit Training and Post-Recruit Training Cohort Comparisons

Table 4 compares the two female cohorts on the summary variables from
the pre-recruit training survey. Most differences were not statistically
significant although the 1978 group saw the civilian role as more attractive,
expected more feedback from the job, expected lower unit attraction and
proficiency, and exhibited higher internal motivation. More will be said
about these summary variables in a later section when their relation to

TABLE 3

DEMOGRAPHIC AND ATTRITION COMPARISON OF 1977 AND 1978 FEMALE COHORTS

| | 1977 | | 1978 | | t^a/χ^{2b} | p |
	Mean	SD	Mean	SD		
Education (years)	12.05	.21	12.12	.45	-1.41[a]	ns
Mental (AFQT)	75.02	10.66	72.99	11.29	1.22[a]	ns
Age (years)	19.30	1.79	19.92	2.00	-2.17[a]	.03
Race (% Caucasian)	94.1		81.1		5.60[b]	.02
Marital Status (% married)	4.7		2.2		0.24[b]	ns
Attrition (% attrite)	18.8		11.1		1.49[b]	ns
N	85		90			

Source: M79-5,6: Non-reservist female recruits who completed the pre-recruit training survey with 3 or fewer consistency errors and matched with demographic tape.

TABLE 4

COMPARISON OF PRE-RECRUIT TRAINING SURVEY RESPONSES
OF 1977 AND 1978 FEMALE RECRUIT COHORTS

VARIABLE	1977 FEMALES			1978 FEMALES			DIFFERENCE	
	MEAN	SD	N	MEAN	SD	N	t	p
Intentions								
To Complete	4.56	.79	85	4.38	.92	90	1.44	ns
To Reenlist	3.02	.99	85	3.12	.85	90	-0.71	ns
Expectancy								
Chances of Completing	.88	.20	85	.86	.21	90	0.77	ns
Chances of Finding Civilian Job	.41	.29	85	.45	.29	90	-0.99	ns
Role Attraction, Force								
Marine Role Attraction	36.20	17.12	85	41.03	15.94	90	-1.93	ns
Civilian Role Attraction	20.70	11.08	85	24.01	13.37	90	-2.11	.04
Marine Role Force	33.50	18.37	85	36.25	18.30	90	-0.99	ns
Civilian Role Force	9.54	10.12	85	12.22	12.41	90	-1.56	ns
Difference: Role Force	23.96	20.34	85	24.03	20.49	90	-0.02	ns
Difference: Role Attraction	16.13	16.63	85	17.03	16.08	90	-0.36	ns
Leadership (LBDQ)								
Leader Consideration	43.93	10.55	83	43.77	10.76	88	0.10	ns
Leader Structure	65.01	6.26	82	65.26	6.96	87	-0.25	ns
Job (JDS)								
Skill Variety	3.60	0.69	85	3.60	0.64	90	0.00	ns
Task Identity	3.28	0.65	85	3.31	0.71	90	0.00	ns
Task Significance	3.83	0.73	83	3.96	0.76	89	-1.19	ns
Autonomy	3.05	0.79	83	2.90	0.83	90	1.26	ns
Feedback From Job	3.61	0.57	83	3.81	0.69	90	-2.08	.04
Feedback From Others	3.41	0.71	85	3.64	0.83	90	-1.95	ns
Dealing With Others	3.87	0.57	85	4.17	0.63	90	-3.27	.01
Satisfaction, Individual Differences								
Expected Overall Satisfaction	3.69	0.75	83	3.55	0.76	89	1.25	ns
Internal Motivation	4.05	0.67	85	4.27	0.59	89	-2.35	.02
Growth Need	4.03	0.72	85	4.17	0.70	89	-1.37	ns
Sociometric								
Unit Attraction	11.69	1.63	85	11.03	1.65	90	2.66	.01
Unit Proficiency	7.56	1.14	84	7.14	1.32	90	2.21	.03

Source M79-5.   Non-reservist female recruits who took pre-recruit training survey with three
or fewer consistency errors ·nd matched with demographic tape.

attrition is evaluated. The point to be made here is that there were relatively few pre-recruit training differences between the two female samples.

Table 5 provides a comparison of the two female samples on the end-of-recruit training summary variables. Again there were relatively few significant differences. The 1978 female sample did exhibit lower attraction to the Marine role, had a higher expectancy of finding a civilian job, saw higher leader consideration and lower unit proficiency.

Given the relatively small sample sizes and the general similarity in demographic, pre-recruit training, post-recruit training variables, and the non-significant difference in attrition rates, the two samples were combined to form one female sample. Subsequent analyses are based on this combined sample. The recruit training attrition rate for the combined female sample was 14.9%.

TABLE 5

COMPARISON OF POST-RECRUIT TRAINING SURVEY RESPONSES
OF 1977 AND 1978 FEMALE RECRUIT COHORTS

| VARIABLE | 1977 FEMALES | | | 1978 FEMALES | | | DIFFERENCE | |
	MEAN	SD	N	MEAN	SD	N	t	p
Intentions								
To Complete	4.60	.70	75	4.60	.86	78	- .02	ns
To Reenlist	3.45	1.01	74	3.42	.99	77	.19	ns
Expectancy								
Chances of Completing	.92	.17	75	.94	.17	78	- .82	ns
Chances of Finding Civilian Job	.45	.28	75	.57	.30	77	-2.53	.02
Role Attraction, Force								
Marine Role Attraction	46.62	15.11	75	40.83	17.99	79	2.16	.04
Civilian Role Attraction	26.34	10.96	75	25.42	16.63	79	.40	ns
Marine Role Force	43.48	17.02	75	40.51	17.57	78	1.06	ns
Civilian Role Force	13.02	10.90	75	15.63	15.54	77	-1.20	ns
Difference: Role Force	30.47	17.77	75	24.64	19.52	77	1.92	ns
Difference: Role Attraction	20.28	14.10	75	15.41	16.87	79	1.94	ns
Leadership (LBDQ)								
Leader Consideration	44.29	11.23	73	49.52	10.00	73	-2.97	.01
Leader Structure	65.15	6.10	75	63.69	8.61	75	1.19	ns
Job (JDS)								
Skill Variety	3.36	.91	74	3.27	.74	77	.71	ns
Task Identity	3.34	.72	75	3.22	.59	76	1.11	ns
Task Significance	3.83	.84	75	3.79	.79	78	.28	ns
Autonomy	3.02	.80	75	3.11	.60	78	- .75	ns
Feedback From Job	3.69	.73	75	3.71	.74	78	- .14	ns
Feedback From Others	3.68	.72	75	3.66	.74	75	.19	ns
Dealing With Others	4.05	.55	75	4.21	.58	78	-1.70	ns
Satisfaction, Individual Differences								
Expected Overall Satisfaction	3.77	.73	74	3.65	.75	79	.97	ns
Internal Motivation	4.30	.64	74	4.32	.60	78	- .23	ns
Growth Need	4.47	.49	75	4.33	.67	76	1.50	ns
Sociometric								
Unit Attraction	11.37	2.03	75	11.17	1.89	77	.64	ns
Unit Proficiency	32.44	6.37	75	30.04	8.28	79	2.01	.05

Source M79-5.   Non-reservist females who completed the post-recruit training survey with three
or fewer consistency errors and matched with demographic tape.

Role Outcome and Expectancy Ratings

The survey asked recruits to rate 50 role outcomes on a scale of desira-
bility-undesirability ranging from +2.0 to -2.0. The outcomes were then
rated again in terms of expectancy of attaining each outcome by being in a
Marine role and expectancy of attaining each outcome by being in a civilian
role. These expectancy ratings were on a scale of zero (no chance of attaining)
to 1.0 (100% of attaining). The mean outcome desirability and expectancy
ratings for the total female sample are presented in Table 6.

The outcomes rated by female recruits as most desirable were:

•Learning new skills that will help me later in life.

•An organization that fulfills its promises to you.

•A job which gives me pride in myself.

•Good insurance and medical benefits.

•An exciting job.

•Good financial benefits.

The outcomes seen by the female recruits as least desirable were:

•A repetitive job with little responsibility.

•Working closely with people who use drugs.

•A job involving potential physical violence.

•Interference with marriage/family plans.

•Long separations from home and family.

It is interesting to note that the outcomes rated most and least desirable
by the females are similar to the ratings given by males in the primary
longitudinal sample (Mobley, et al., 1977). The rank order correlation
between the male and female outcome desirability ratings was .92.

The expectancy ratings, also given in Table 6, show the female recruits'
perceived chances of attaining each outcome by being in either a Marine or

TABLE 6

MEAN ROLE OUTCOME AND ROLE EXPECTANCY RATINGS FOR
PRE-RECRUIT TRAINING FEMALE MARINE RECRUITS

Outcomes	Outcome Desirability (1)		Chances of Attainment Marine (2) Mean	Chances of Attainment Civilian (2) Mean
	Rank	Mean		
1. Being part of an effective team	21	1.34	.90	.48
2. Respect from friends and relatives	10.5	1.47	.86	.57
3. Learning new skills	13.5	1.41	.93	.50
4. Having an exciting job	5.5	1.54	.78	.42
5. Having a dangerous job	44	-0.34	.41	.24
6. Being in a job where discipline is strictly enforced	42	-0.01	.86	.35
7. A job that pays well	8	1.51	.79	.43
8. Long separations from home and family	45	-0.48	.71	.21
9. A job that is important to the country	36	0.71	.81	.25
10. Fair treatment from superiors	17	1.39	.71	.50
11. Working with people I like	19	1.38	.69	.57
12. A job where good performance is recognized	12	1.42	.82	.54
13. A job that includes extensive travel	35	0.81	.71	.21
14. A job where duties and orders are clearly defined	32	1.11	.86	.50
15. A job which gives me pride in myself	3	1.59	.90	.45
16. A job where poor performance is penalized	41	0.30	.81	.51
17. Sufficient leisure time to pursue your own interests	10.5	1.47	.60	.69
18. A job with little responsibility	46	-0.82	.18	.53
19. Superiors who are concerned about me as an individual	27	1.25	.60	.47
20. Learning skills that will help me in later life	1	1.64	.85	.46
21. Good financial benefits	5.5	1.54	.86	.40
22. Being in control of your own activities	28	1.24	.55	.61
23. Freedom to make your own decisions	25	1.30	.54	.61
24. Doing a real man's job	38	0.51	.62	.39

TABLE 6 (Con't)

Outcomes	Outcome Desirability (1)		Chances of Attainment Marine (2) Mean	Chances of Attainment Civilian (2) Mean
	Rank	Mean		
25. Being part of a well-disciplined organization	34	1.01	.93	.37
26. Being part of an efficient organization	22	1.33	.90	.46
27. Physically demanding work	40	0.33	.53	.44
28. Specific kinds of training I want	31	1.20	.72	.34
29. Work under good leadership	17	1.39	.84	.48
30. Working closely with people of another race	37	0.53	.81	.55
31. Being in control of your own life	9	1.49	.55	.73
32. A high degree of job security	20	1.37	.84	.36
33. Good insurance and medical benefits	4	1.58	.95	.36
34. Interferes with marriage/family plans	47	-0.86	.47	.27
35. An organization flexible enough to meet my changing needs	13	1.03	.56	.41
36. Having clear work goals	24	1.31	.80	.51
37. A high degree of personal freedom	29	1.23	.84	.63
38. A job where you can "get your head together"	30	1.21	.71	.41
39. A job where I can become a real woman	39	0.50	.64	.35
40. Getting away from a bad home situation	43	-0.11	.52	.25
41. A job involving potential physical violence	48	-1.00	.37	.24
42. Training opportunities that will contribute to my long term career plans	15	1.40	.82	.36
43. A chance to see different parts of the country or the world	13.5	1.41	.78	.19
44. Making a lot of new friends	21	1.32	.91	.54
45. An organization that fulfills its promises to you	2	1.63	77	.43
46. Having a leader who is consistent	26	1.29	.80	.49
47. Working closely with people who use drugs	49	-1.03	.24	.52
48. Having a leader who is well qualified	7	1.53	.86	.53
49. A repetitive job with little responsibility	50	-1.12	.25	.58
50. Rapid promotional opportunities	17	1.39	.68	.31

Source: M79-9

N=175 non-reservist female recruits with three or fewer survey consistency errors and matched with demographic tape.

CODING NOTE:

(1) Outcome Desirability Scale: -2.0 = very undesirable to 2.0 = very desirable.

(2) Outcome Expectancy Scale: 0 = No chance of attainment to 1.0 = 100% chance of attainment.

civilian role. If the Marine role is seen as more likely to lead to desirable outcomes and less likely to lead to undesirable outcomes, as contrasted to a civilian role, then the Marine role will be relatively more attractive.

The results reported in Table 6 should be of interest to recruiters, personnel policy managers, and those responsible for recruit training since the attraction of the Marine role relative to the civilian role is relevant to recruiting and attrition. Although little can be done to change expectancies regarding the civilian role, expectations regarding the military role may be altered by accurate and realistic recruiting information, realistic previews, etc. Further, policies and practices, to the extent feasible and useful, could be modified to enhance attainment of outcomes seen as desirable, e.g., skill learning, and minimize outcomes seen as undesirable, e.g., repetitive job with little responsibility.

Intentions and Expectancy of Completing Enlistment

Previous research has shown that behavioral expectancies and behavioral intentions are important predictors of subsequent behavior (Mobley et al., 1979). In the present study, females were asked, prior to the start of recruit training, their intentions to complete their enlistment, intentions to reenlist, expectancy (chances) of being successful in the Marine role, and expectancy (chances) of finding an acceptable civilian role.

Table 7 presents the percentage responses for these questions and their correlation with attrition. As can be seen, 14.3% of the females indicated, before recruit training, they were either uncertain, probably did not, or difinitely did not intend to complete their enlistment. Some 31.4% indicated they probably or definitely intended to reenlist. Turning to

TABLE 7

BEHAVIORAL INTENTIONS AND EXPECTANCIES OF COMPLETING ENLISTMENT

INTENTIONS

I intend to complete my enlistment:	%	I intend to reenlist:	%
Definitely Not	1.14		6.29
Probably Not	10.86		15.43
Uncertain	2.29		46.86
Probably Yes	20.00		27.43
Definitely Yes	65.71		4.00
Correlation with Attrition:	- .21**		- .12

ROLE EXPECTATIONS

Chances of completing my enlistment:	%	Chances of finding an acceptable civilian job:	%
No Chance	1.14		12.57
25% Chance	1.14		36.57
50% Chance	11.43		28.00
75% Chance	21.14		11.43
100% Chance	65.14		11.43
Correlation with Attrition:	- .20**		.06

Source: M79-4

N=175   Non-reservist female recruits with 3 or fewer consistency errors on the pre-recruit training survey and matched with demographic tape.

$*p < .05$
$**p < .01$

expectations, 13.7% of the female recruits indicated they had a 50% or less chance of completing their enlistment. Some 77.1% indicated they had a 50% or less chance of attaining an acceptable civilian role.

Since one's behavioral intention and expectation of completing an enlistment are significantly related to attrition, steps could be taken to pre-screen those with low intentions and expectations. It also appears appropriate to increase such intentions and expectations through, e.g., counseling, realistic previews, and/or training (see Horner, et al., 1979).

Reliability of Leadership, Job Content, Groups, and Individual Measures

As noted in the Measures section of this report, the survey included a number of measures dealing with leadership, job content, and group variables. The individual level variables of growth need strength and internal motivation also were measured. Subsequent sections will analyze how these variables and the role attraction, expectancy, and intention variables relate to attrition and change over recruit training. Before proceeding, however, the reliability of the summary scores to be used are examined.

Table 8 presents the reliability estimates (coefficient alpha) for the leadership, job content, group, and individual female pre- and post-recruit training measures. The leadership and growth need measures exhibited acceptable internal consistency. The group and job content measures reflected relatively lower internal consistency. The "expected" response set on the pre-recruit training survey, the relatively few number of items on the sub-scales other than leadership, and relatively low variance on some items contribute to the lack of stronger reliability estimates. The reliability estimates generally increased from the pre- to post-recruit training measures and may in part be due to moving from an expected to a descriptive response set.

TABLE 8

RELIABILITY ESTIMATES FOR SUMMARY VARIABLES

	Reliability Estimates (alpha)	
Variable	Pre-Recruit Training	Post-Recruit Training
Leadership		
Consideration	.86	.88
Structure	.80	.81
Job Content		
Skill Variety	.31	.67
Task Identity	.33	.42
Task Significance	.51	.69
Autonomy	.57	.53
Feedback for Job	.39	.70
Feedback from Others	.64	.70
Dealing with Others	.46	.29
Work Group		
Attraction	.64	.73
Proficiency	.67	.67
Overall Satisfaction	.69	.68
Individual		
Growth Need Strength	.83	.78
Internal Motivation	.66	.68
N	153	124

Source: M79-11
Non-reservist female recruits who had 3 or fewer consistency errors on the survey and matched with the demographic tape. Casewise deletion used.

Pre-Recruit Training Differences Between Subsequent Graduates and Attrites

Up to this point, the results have provided primarily descriptive data on the female cohorts. This section presents bivariate analyses of the pre-recruit training variable differences between those who subsequently complete recruit training and those who became recruit training attrites.

Demographic variables. Table 9 summarizes the mean differences between recruit training graduates and attrites on the demographic variables. There were no significant differences. This finding is in contrast to literature on male military personnel (Hand, et al., 1977) and the results reported earlier for male recruits (Youngblood, et al., 1980) where, with some exceptions, older, less educated recruits, and those with lower mental scores had higher attrition. It is probable that the higher means and lower variances exhibited by females account for this difference. This is, of course, related to the female selection criteria being used by the Marine Corps.

Survey measures. The mean differences between female graduates and attrites on the pre-recruit training survey summary measures are presented in Table 10. Consistent with our previous research on male cohorts (Young-blood, et al., 1980) and the literature on turnover (Mobley, et al., 1979) behavioral intentions to complete the enlistment significantly differentiated subsequent graduates from attrites. The difference between subsequent grad-uates and attrites in expectancy of completing the enlistment reached the $p < .07$ level of significance.

As noted in the Measures section, role force is a composite index of role outcome desirabilities weighted by expectancy of attaining each outcome in a military or civilian role (see Table 6). These cross-products are summed to form the role attraction index which, when weighted by expectancy of attaining or staying in the role, forms the role force index for the civilian and military role. The analysis of pre-recruit training role

TABLE 9

DEMOGRAPHIC COMPARISON OF FEMALE RECRUIT TRAINING
GRADUATES AND ATTRITES

Variable	Attrites			Graduates			t^a/χ^{2b}	p
	Mean	SD	N	Mean	SD	N		
Education (years)	12.04	0.20	26	12.09	0.37	149	-1.13^a	ns
Mental (AFQT)	71.85	12.16	26	74.35	10.79	149	-1.07^a	ns
Age (years)	19.33	1.69	26	19.67	1.96	149	$-.084^a$	ns
Marital Status (% married)	0.038		26	0.034		149	0.01^b	ns
Race (% caucasian)	0.846		26	0.879		149	0.02^b	ns

Source: M79-6,10: Non-reservist females who completed pre-recruit training survey
with three or fewer consistency errors and matched with demo
tape.

a) two-tailed t-tests.

b) corrected chi-square for categorical variables.

TABLE 10

COMPARISON OF SUBSEQUENT GRADUATES AND ATTRITES ON PRE-RECRUIT TRAINING VARIABLES

VARIABLE	ATTRITES MEAN	SD	N	GRADUATES MEAN	SD	N	DIFFERENCE t^a	p
Intentions								
To Complete	4.04	1.18	26	4.54	0.78	149	2.10	.05
To Reenlist	2.81	1.10	26	3.12	0.88	149	1.62	ns
Expectancy								
Chances of Completing	0.77	0.31	26	0.89	0.18	149	1.91	.07
Chances of Finding Civilian Job	0.47	0.31	26	0.42	0.29	149	-0.75	ns
Role Attraction, Force								
Marine Role Attraction	35.80	16.34	26	39.19	16.71	149	0.96	ns
Civilian Role Attraction	23.53	14.50	26	21.84	12.07	149	-0.64	ns
Marine Role Force	29.96	19.71	26	35.78	18.01	149	1.50	ns
Civilian Role Force	13.47	13.96	26	10.48	10.89	149	-1.24	ns
Difference: Role Force	16.49	24.45	26	25.31	19.37	149	2.06	.04
Leadership (LBDQ)								
Leader Consideration	47.88	10.76	26	43.12	10.48	145	-2.13	.04
Leader Structure	63.29	6.86	24	65.45	6.54	145	1.49	ns
Job (JDS)								
Skill Variety	3.68	0.70	26	3.59	0.66	149	-0.66	ns
Task Identity	3.27	0.77	26	3.30	0.66	149	0.23	ns
Task Significance	3.80	0.69	25	3.91	0.76	147	0.70	ns
Autonomy	2.64	0.74	26	3.03	0.82	147	2.26	.03
Feedback From Job	3.76	0.43	25	3.71	0.67	148	-0.38	ns
Feedback From Others	3.47	0.73	26	3.53	0.79	149	0.36	ns
Dealing With Others	4.11	0.57	26	4.01	0.62	149	-0.79	ns
Satisfaction, Individual Differences								
Satisfaction	3.53	0.80	25	3.64	0.75	147	0.62	ns
Internal Motivation	3.96	0.70	26	4.20	0.63	148	1.77	ns
Growth Need	3.85	0.74	26	4.14	0.70	148	1.94	.06
Sociometric								
Unit Attraction	11.42	1.81	26	11.34	1.65	149	-0.23	ns
Unit Proficiency	7.69	1.32	26	7.28	1.24	148	-1.54	ns

Source: M79-8. Non-reservist females who completed pre-recruit training survey with three or fewer consistency errors and matched with demographic tape.

a) t-tests based on pooled variance except where heterogeneity of variance is indicated. All tests are two-tailed.

attraction and role force for both the Marine and civilian role (Table 10) revealed no significant differences between subsequent graduates and attrites. However, the difference between Marine and civilian role force was significantly higher for graduates as contrasted with attrites. The latter result is consistent with our conceptual model and with findings for three of the four male cohorts (Youngblood, et al., 1980).

The only other significant differences evident in the Table 10 analysis were: the higher expected leader consideration, the lower expected job autonomy, and the lower growth need strength exhibited by attrites compared to graduates.

It is important to recall that the measures reported in Table 10 are based on pre-recruit training surveys. Subsequent sections of this report will deal with the post-recruit training and attrite surveys. First, however, the multivariate prediction of attrition based on the pre-recruit training measures will be reported.

Multivariate prediction of attrition. Since the variables presented in Tables 9 and 10 are correlated, it is necessary to conduct a multivariate analysis. Such an analysis permits an identification of the linear combination of variables that best predict female recruit training attrition. Further, since this research is based on a conceptual model of the attrition process, it is possible to specify the model and evaluate its generalizability across cohorts. In the present analysis, the multivariate process model is evaluated with the female cohort and compared with multivariate results from the male cohorts previously reported by Youngblood, et al. (1980).

Table 11 present the results of the step wise multiple regression analysis of female recruit attrition. Five variables entered the equation

TABLE 11

FEMALE RECRUIT TRAINING ATTRITION STEPWISE MUTLIPLE REGRESSION

Variable	Equation		Step	
	b	B	R	R^2
Leader Consideration	-.008	-.25	.18	.03
Job Autonomy	.97	.22	.28	.08
Skill Variety	-.13	-.23	.32	.11
Growth Need Strength	.09	.17	.37	.14
Intention to Complete Enlistment	.06	.13	.39	.16
Constant	(.79)			

Attrition Coded 1 = completed recruit training; 0 = attrite.

Equation $F(5,151)$ = 5.55 ($p < .05$)

Adjusted R^2 = .13

Source: M79-11. Non-reservist female recruits who completed pre-recruit
training survey with 3 or fewer consistency errors and matched
with demographic tape. Casewise deletion used in this analysis.

and resulted in a multiple correlation of .39 (adjusted R^2 = 13 percent).
In order of entry, the variables were: expected leader consideration
(attrites expected more considerate leaders); expected job autonomy (attrites
lower), expected skill variety (attrites higher); growth need strength
and intention to complete (attrites lower on both).

The female data also were subjected to a hierarchical regression analysis
with the variables entered in four steps based on a priori model of the
attrition process (Mobley, et al., 1979). Demographic and personal variables
were entered as the first set, the expected job content, leadership, and
work group variables as the second set, expected satisfaction and net role
force as the third set, and finally intention to complete the enlistment as
the final variables. This analysis permits a comparison of the attrition
process model results for females with the previously reported analyses for
the male cohorts (Youngblood, et al., 1980).

Table 12 presents the results of the hierarchical regression analysis
of female attrition. The only set of variables which made a significantly
unique contribution was the expected job content, leadership, and work group
set. The overall equation was significant at the $p < .10$ level and the
adjusted R^2 was seven percent. The significant individual variables were:
growth need strength ($p < .10$); skill variety ($p < .05$); autonomy ($p < .05$);
and leader consideration ($p < .05$).

When the results of this analysis were compared with the male results
(Youngblood, et al., 1980), notable differences in the attrition process
model were evident. For the males, the demographic/personal, expected satis-
faction/net role force, and behavioral intention step F's were significant.
For the females, only the expected job content, leadership, and work group
step F was significant. With respect to individual variables in the total
equation, there was no overlap between the males and females in significant

TABLE 12

HIERARCHICAL MULTIPLE REGRESSION OF FEMALE RECRUIT TRAINING
ATTRITION[a] ON PRE-RECRUIT TRAINING SURVEY AND
DEMOGRAPHIC VARIABLES

Independent Variable	b	Beta	Step F[b]
SET I			
Demographic/Personal			
Age (years)	-.01	-.04	
Education (years)	.06	.06	
Growth Need Strength	.09*	.17	
Internal Motivation	.09	.15	
Marital Status[c]	-.08	-.04	
Mental Score (AFQT)	-.001	-.04	
Race[d]	-.006	-.01	0.72
SET II			
Job Content			
Skill Variety	-.14**	-.24	
Task Identity	-.02	-.03	
Task Significance	.03	.07	
Autonomy	.11**	.25	
Feedback from Job	-.07	-.12	
Feedback from Others	-.02	-.04	
Dealing with Others	-.03	-.05	
Leadership			
Consideration	-.007**	-.22	
Structure	.001	.02	
Work Group			
Attraction	.003	.01	
Proficiency	-.03	-.10	2.08**
SET III			
Expected Satisfaction	-.05	-.10	
Net Role Force	.009	.05	0.31
SET IV			
Intention to Complete	.06	.15	1.78

Intercept = .47
Overall $F_{(21,135)}$ = 1.59*
R^2 = .20, Adjusted R^2 = .07

Source: M79-12. Non-reservist female recruits who completed pre-recruit
training survey with 3 or fewer consistency errors and
matched with demographic tape.

N = 157 with casewise deletion

[a]Attrition coded 1 if non-attrite; 0 if attrite
[b]Stepwise F is reported for each of the four sets of independent variables.
Set I entered first, Set II second, and so forth.
[c]1 = married; 0 = not married
[d]1 = Caucasian; 0 = non-Caucasion

*$p < .10$
**$p < .05$
***$p < .01$

regression weights.

Thus, with respect to the a priori attrition process model, the males and females appear to be different. It is important to recognize, however, that the male analyses were based on much larger sample sizes, exhibited greater variance in the independent variables, and that the females represent a "higher quality" sample than the males as indexed by education and mental grade.

It is evident from this analysis and tne previously summarized bivariate analysis that expected job content factors of skill variety and job autonomy, expected leader consideration, and growth need strength are significant unique contributors to the prediction of female recruit training attrition. The importance of accurate expectations and/or organizational modifications of the job content and leadership variables is clearly suggested. Selection on, and/or development of growth need strength also is suggested.

Reasons For Attrition

The survey given attrites prior to their departure from the Recruit Depot included questions dealing with self-reported reasons for attrition. The mean ratings and rankings for these self-reported reasons for attrition are presented in Table 13. In terms of rank order, the primary reasons for attrition were reported to be:

1. Lack of personal freedom

2. Too much pressure

3. Missed family and friends

4. Rules and regulations too rigid.

These reasons also were among the highest ranked by male cohorts reported earlier (Youngblood, et al., 1980). Rank order correla-

TABLE 13

SELF-REPORTED REASONS FOR RECRUIT TRAINING ATTRITION:
1977 AND 1978 FEMALE COHORTS

I am leaving the Marine Corps because of:	Rank	Mean[a]
Physical health reasons.	12	2.59
Mental health reasons.	13.5	2.55
The poorly trained leaders I had.	17	2.05
The inability to make friends with other Marines.	26	1.64
Family problems back home.	8.5	2.64
The lack of personal freedom as a Marine.	1	3.73
Other enlistees picked on me.	29	1.55
I had trouble learning.	13.5	2.55
Inability to complete a training school.	22	1.82
A good job opportunity as a civilian.	15	2.36
Inability to get promoted.	24	1.77
Being a Marine is too physically demanding.	7	2.73
The assignments were too boring.	10	2.46
Superiors treated me unfairly.	8.5	2.64
There was too much pressure on me.	2	3.64
I missed my family/friends back home.	3	3.41
Getting in trouble was the only way I could get out of the Marines	19	1.91
The rules and regulations were too rigid.	4	3.32
There wasn't enough discipline.	27.5	1.59
I want to get married.	11	2.41
I just couln't stay out of trouble.	22	1.82
A change in my religious values.	19	1.91
Minorities are discriminated against.	16	2.27
I didn't get the location I wanted.	22	1.82
I didn't get the training I wanted.	19	1.91
I got hung up on drugs.	27.5	1.59
I couldn't get along with members of other races.	30	1.46
There were too many "Mickey Mouse" rules and regulations.	5.5	2.96
I was treated like a little child.	5.5	2.96
I couldn't get in the unit I wanted.	25	1.73
N	22	

[a]Scale = 1, Strongly Disagree to 5, Strongly Agree

Source: M79-7

tions were computed between reasons given by the female cohort (Table 13) and those previously reported by the male cohorts. The results were:

1977-78 Females vs. 1976 Parris Island Males: rho = .91;

vs. 1977 Parris Island Males: rho = .74;

vs. 1977 San Diego Males: rho = .74;

vs. 1978 San Diego Males: rho = .65.

Thus, the male and female recruit training attrites sampled gave similar self-reported reasons for attrition, especially for the most important reasons.

Table 14 summarizes the reasons for attrition as administratively recorded on the HMC master file. The major reasons were "unsuitability-personality," (36.4%) and "unsuitability-apathy, defective attitude, inability to expend effort constructively," (27.3%). In the male cohorts, previously reported by Youngblood, et al. (1980), "unsuitability-apathy" was a major administrative reason for male recruit attrition at both Parris Island and San Diego and "unsuitability-personality" was a major administrative reason for male recruit attrition at Parris Island.

Pre- and Post-Recruit Training Differences for Graduates

The preceeding analyses have dealt with reasons for attrition and with differences between graduates and attrites on the pre-recruit training measures. We now turn our attention to a comparison of the pre- with post-recruit training measures for female graduates. This analysis, presented in Table 15, summarizes the changes in measures for the female graduates who completed both the pre- and post-training measures.

TABLE 14

ADMINISTRATIVELY RECORDED REASONS FOR FEMALE RECRUIT TRAINING ATTRITION

Reason	N	%
Unsuitability-Personality	8	36.4
Unsuitability-Apathy, Defective Attitude Inability to Expend Effort Constructively	6	27.3
Erroneous Entry	4	18.2
Misconduct-Fraudulent Entry	3	13.6
Recruit Failure Program	1	4.5
TOTAL	22	100.0

Source: M79-7: Non-reservist female recruit who completed attrite survey with three or fewer consistency errors and matched with demographic tape.

TABLE 15

COMPARISON OF PRE AND POST RECRUIT TRAINING MEASURES FOR FEMALE GRADUATES

VARIABLE	N	PRE-RECRUIT TRAINING MEAN	SD	POST-RECRUIT TRAINING MEAN	SD	t^a	p
Intentions							
To Complete	136	4.58	0.74	4.60	0.76	0.29	ns
To Reenlist	135	3.16	0.89	3.41	0.98	3.27	.01
Expectancy							
Chances of Completing	136	0.88	0.19	0.93	0.17	2.65	.01
Chances of Finding Civilian Job	135	0.43	0.29	0.51	0.29	2.66	.01
Role Attraction, Force							
Marine Role Attraction	137	39.34	17.22	43.58	17.15	2.61	.01
Civilian Role Attraction	137	22.11	12.30	25.34	13.77	3.13	.01
Marine Role Force	136	36.01	18.46	42.17	17.60	3.73	.01
Civilian Role Force	135	10.65	11.11	13.84	13.08	3.22	.01
Difference Role Force	135	25.31	19.70	28.22	18.82	1.64	ns
Leadership (LBDQ)							
Leader Consideration	129	43.58	10.44	46.41	10.69	2.86	.01
Leader Structure	131	65.31	6.78	64.63	7.18	-1.16	ns
Job (JDS)							
Skill Variety	135	3.59	0.65	3.33	0.84	-3.37	.01
Task Identity	135	3.34	0.67	3.24	0.66	-1.01	ns
Task Significance	135	3.93	0.78	3.83	0.78	-1.37	ns
Autonomy	135	3.09	0.80	3.05	0.69	-0.54	ns
Feedback From Job	137	3.71	0.68	3.73	0.73	0.26	ns
Feedback From Others	135	3.54	0.80	3.67	0.75	1.81	ns
Dealing With Others	137	4.00	0.61	4.13	0.59	2.30	.03
Satisfaction, Individual Differences							
Satisfaction	134	3.68	0.73	3.71	0.74	-0.44	ns
Internal Motivation	134	4.21	0.63	4.31	0.62	1.65	ns
Growth Need	135	4.16	0.71	4.39	0.60	4.27	.01
Sociometric							
Unit Attraction	136	11.33	1.66	11.22	1.93	-0.64	ns
Unit Proficiency	135	7.33	1.25	7.69	1.21	2.81	.01

Source: N79-8

a) Paired t-tests based on female recruit training graduates who completed both the pre and post training measures with three or fewer consistency errors and matched with the demographic tape.

A number of significant changes were evident. There was a significant increase in intention to reenlist, in chances of completing the enlistment and in perceived chances of finding an acceptable civilian job. Further, there were significant increases in role attraction and role force for both the Marine and civilian roles.

At the end of recruit training, the graduates reported significantly higher leader consideration, dealing with others, and unit proficiency than expected prior to recruit training. However, skill variety was less than expected. Finally, graduates evidenced a significant increase in growth need strength.

When compared with the previously reported male results (Youngblood, et al., 1980), the female and male graduates exhibited consistent changes in intention to reenlist, expectancy of completing the enlistment, chances of finding an acceptable civilian job, increases in Marine role attraction and role force, increases in leader consideration, unit proficiency, and growth need strength. Comparison of changes by male and female graduates on the other variables revealed no consistent pattern.

In interpreting these results, it must be remembered that the post-recruit training measure was given during graduation week and thus may be subject to a generalized graduation euphoria.

Pre- and Out-Placement Differences for Attrites

The final analysis compares the pre-recruit training measure and the out-placement measure for attrites. These comparisons are given in Table 16. Just as the graduate post-training measures may be positively biased, the attrite out-placement measures may be negatively biased even though confidentiality was guaranteed.

TABLE 16

COMPARISON OF PRE-RECRUIT TRAINING AND OUT-PLACEMENT MEASURES FOR FEMALE ATTRITES

VARIABLE	PRE-RECRUIT TRAINING N	MEAN	SD	OUT-PLACEMENT MEAN	SD	t^a	p
Expectancy							
Chances of Finding Civilian Job	21	0.42	0.30	0.61	0.27	1.95	.07
Role Attraction, Force							
Marine Role Attraction	21	33.33	15.69	24.71	14.20	-2.36	.03
Civilian Role Attraction	21	20.10	13.35	22.33	9.25	0.91	ns
Marine Role Attraction	21	26.98	18.77	4.83	8.13	-4.71	.01
Civilian Role Force	21	10.12	11.83	14.65	10.76	1.45	ns
Difference Role Force	21	16.86	22.57	-9.82	12.85	-4.58	ns
Leadership (LBDQ)							
Leader Consideration	21	47.29	10.85	40.19	13.46	-2.25	.04
Leader Structure	20	62.65	6.79	60.10	8.92	-1.21	ns
Job (JDS)							
Skill Variety	21	3.61	0.63	2.98	0.79	-3.15	.01
Task Identity	21	3.30	0.80	3.00	0.80	-1.40	ns
Task Significance	20	3.77	0.61	3.18	0.93	-2.91	.01
Autonomy	21	2.62	0.75	2.68	1.13	0.23	ns
Feedback From Job	21	3.75	0.46	3.16	0.83	-3.25	.01
Feedback From Others	21	3.48	0.66	3.43	0.87	-0.21	ns
Dealing With Others	21	4.08	0.67	3.84	0.67	-1.52	ns
Satisfaction, Individual Differences							
Satisfaction	20	3.42	0.78	2.93	1.04	-2.61	.02
Internal Motivation	21	3.85	0.59	3.70	0.77	-0.83	ns
Growth Need	21	3.68	0.69	3.75	1.05	0.33	ns
Sociometric							
Unit Attraction	21	10.95	0.36	9.05	2.71	-3.79	.01
Unit Proficiency	21	7.38	1.11	6.67	1.39	-2.43	.03

Source: M79-8

a) Paired t-tests based on female recruit training attrites who completed both the pre- and out-placement measures with three or fewer consistency errors and matched with demographic tape.

The attrites exhibited a sizeable, but marginally significant ($p < .07$) increase in perceived chances of finding an acceptable civilian job, a significant decrease in Marine role attraction and role force, and perceived significantly less leader consideration, skill variety, task significance, feedback from the job, satisfaction, unit attraction, and unit proficiency than expected prior to recruit training.

The female attrite results with respect to changes in expectancy of finding an acceptable civilian job, Marine role attraction, and Marine role force are generally consistent with the previously reported results for male cohorts (Youngblood, et al., 1980). No clear pattern emerges from male-female attrite comparisons on the other variables.

Discussion

The results identified those work role outcomes that female recruits find most and least desirable. When the outcome desirability ratings were combined with role outcome expectancy ratings for military and civilian roles, it was found that the difference in resultant role force (Marine minus civilian) differentiated subsequent graduates from attrites. As in our previous research, behavioral intentions to complete the enlistment, as measured prior to recruit training, significantly differentiated graduates and attrites. Further, subsequent attrites, when compared to graduates, exhibited significantly higher expected leader consideration, lower expected autonomy, and lower growth need strength.

These findings indicate that expectation, behavioral intention, and attitudinal measures, given prior to recruit training, can contribute to

the prediction of female attrition. These findings take on added signif-
icance, since the demographic variables did not differentiate subsequent
female graduates and attrites, probably due to restriction of range.

By identifying high risk candidates at the recruiting
stage, steps could be taken to counsel them prior to enlistment. A
realistic job preview (Horner, et al., 1979) may be useful at the recruiting
stage as well as at the recruit training stage to create realistic expec-
tations, clarify values, teach coping skills, and provide role models.
Further, by identifying high risk recruits after arrival at the Recruit
Depot but prior to actual recruit training, it would be possible to inter-
vene with coaching, counseling, and training directed toward increasing
intention to complete, expectancy of completing, internal motivation, and
role attraction. Recruits identified for such treatment could then be
placed in regular platoons for the start of recruit training.

Selection and early intervention strategies such as those suggested
above are important. However, it is also important to review recruit out-
come preferences, expectations, organizational perceptions and reasons for
attrition from the perspective of policy and practice. What changes could
be made to enhance Marine role attraction and modify job content, con-
sistent with organizational effectiveness objectives?

With respect to comparison of the female results and the previously
reported male results, a number of similarities were observed. The rank
order correlations between male and female outcome preferences and self-
reported reasons for attrition indicated relative similarity. Bivariate
differences between graduates and attrites for intentions to complete,

expectancy of completing, and difference between Marine and civilian role force, were comparable for males and females. However, unlike the males, the demographic variables were not predictive of attrition for females (probably due to relative homogeneity) and the regression model comparisons indicated dissimilarity. For female recruits the job content variables of expected job skill variety and autonomy, expected leader consideration, and growth need strength were particularly salient predictors of attrition in the overall equation.

The low explained variance in turnover was due, in part, to the severe restriction of range in the turnover criterion (base rate of 14.8%) and to the relatively low reliability and variance for some of the pre-recruit training measures. The relatively low R^2 should not, however, preclude using the data to develop counter-attrition strategies for experimental evaluation. Given the importance of the attrition problem in terms of the previously discussed decreasing recruiting population and cost of attrition, the utility of evaluating such counter-attrition strategies is warranted. Our final report, to be issued later this year, will suggest a number of possible counter attrition strategies.

REFERENCES

Campbell, J. P., Dunnette, M. D., Lawler, E. E. III, & Weick, K. E., Jr. Managerial behavior, performance, and effectiveness. New York: McGraw-Hill, 1970.

Dachler, H. P., & Mobley, W. H. Construct validation of an instrumentality expectancy-task-goal model of work motivation: Some theoretical boundary conditions. Journal of Applied Psychology Monograph, 1973, 58, 397-418.

Graen, G. B. Role making process within complex organizations. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology. Chicago: Rand McNally, 1976.

Griffeth, R. W., Meglino, B. M., Youngblood, S. A., & Mobley, W. H. Advanced training and initial duty station values, expectations, and intentions of marine corps enlisted personnel. Columbia: Center for Management and Organizational Research, University of South Carolina, TR-8, March, 1979.

Hackman, J. R., & Oldham, G. R. Development of the job diagnostic survey. Journal of Applied Psychology, 1975, 60, 159-170.

Hackman, J. R., & Oldham, G. R. The job diagnostic survey. Technical Report No. 4, New Haven, Yale University Department of Administrative Sciences (ONR, N0014-67A-0097-0026), May, 1974.

Hand, H. H., Griffeth, R. W., & Mobley, W. H. Military enlistment reenlistment and withdrawal research: A critical review of the literature. Columbia: Center for Management and Organizational Research, University of South Carolina, TR-3, ADA048955, November, 1977.

Horner, S. O., Mobley, W. H., & Meglino, B. M. An experimental evaluation of the effects of a realistic job preview on marine recruit affect, intentions and behavior. Columbia: Center for Management and Organizational Research, University of South Carolina, TR-9, September, 1979.

Huck, D. F., & Midlam, D. O. A model to analyze the cost impact of first term attrition in the navy and marine corps. DOD/ONR Conference of First Term Attrition, Leesburg, Virginia, April, 1977.

Johnston, J. Econometric methods. New York: McGraw-Hill, 1972.

Lawler, E. E. Motivation in work organizations. Montery Brooks/Cole, 1973.

Libo, L. M. Measuring group cohesion. Ann Arbor: Research Center for Group Dynamics, University of Michigan, 1953.

Locke, E. A. Personnel attitudes and motivation. Annual Review of Psychology 1975, 26, 457-480.

Lockman, R. F. Forecasting enlisted attrition: The first year of Service. Center for Naval Analysis, 1975.

Matthews, W. T. Quality of marines: Test scores, personal data, and Performance. DOD/ONR Conference on First Term Attrition, Leesburg, Virginia, April, 1977.

Mitchell, T. R. Expectancy models of job satisfaction, occupational preference, and effort: A theoretical, methodological, and empirical appraisal: Psychological Bulletin, 1974, 81, 1053-1097.

Mobley, W. H. Intermediate linkages in the relationship between job satisfaction and employee turnover. Journal of Applied Psychology, 1977, 62, 237-240.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglino, B. M. Review and conceptual analysis of the employee turnover process. Psychological Bulletin, in press.

Mobley, W. H., Hand, H. H., Baker, R. L., & Meglino, B. M. An analysis of recruit training attrition in the u. s. marine corps. Columbia: Center for Management and Organizational Research, University of South Carolina, TR-5, February, 1978.

Mobley, W. H., Hand, H. H., & Logan, J. E. A longitudinal study of enlisted personnel attrition in the u.s. marine corps: Preliminary recruit training results. In Sinaiko, H. W. (Ed.) First term enlisted attrition. Washington, D. C., Smithsonian Institution, 1977.

Mobley, W. H., Hand, H. H., Logan, J. E., & Baker, R. L. Pre-recruit training, values, expectations, and intentions of marine corps recruits. Columbia: Center for Management and Organizational Research, University of South Carolina, TR-2, ADA041194, May, 1977.

Porter, L. W., & Steers, R. W. Organizational, work and personal factors in employee turnover and absenteeism. Psychological Bulletin, 1973, 80, 151-176.

Sands, W. A. Prediction of enlisted attrition - (two years): The poet - 2 model. Conference of the Military Testing Association, Pensacola, October, 1976. (NPRDC).

Stogdill, R. M., & Coons, A. E. Leader behavior: Description and Measurement. Columbua, Ohio State University, Bureau of Business Research Monograph No. 88, 1957.

Schneider, J. The "greener grass" phenomenon: Differential effects of a work context alternative on organizational participation and withdrawal intentions. Organizational behavior and human performance, 1976, 16, 308-333.

Schneider, J. & Katz, A. Personnel reactions to incentives, naval conditions and experience: A longitudinal research study. Report No. 3, Navy Personnel Research and Development Center, San Diego, 1972.

Vroom, V. H. Work and motivation, New York: Wiley, 1964.

Wharton, E. F. A. Interim report for office of naval research contract N000014-76-C-0782. Volume I, Philadelphia: July, 1979.

Wiskoff, M. E. Review of career expectations research: Australia, Canada, United Kingdom and United States. NPRDC TN 77-9, Navy Personnel Research and Development Center, San Diego, March, 1977.

Youngblood, S. A., Meglino, B. M., Mobley, W. H., & Moore, D. P. A cross-sectional analysis and generalizability implication of a military attrition model. Columbia: Center for Management and Organizational Research, University of South Carolina, TR-10, January, 1980.

Office of Naval Research
(Code 452)
800 N. Quincy St.
Arlington, Virginia 22217

Commanding Officer
Naval Research Laboratory
Code 2627
Washington, D.C. 20375

Defense Documentation Center
Accessions Division
ATTN: DDC-TC
Cameron Station
Alexandria, Virginia 22314

Science and Technology Division
Library of Congress
Washington, D.C. 20540

Commanding Officer
ONR Branch Office
Bldg. 114, Section D
666 Summer St.
Boston, Massachusetts 02210

Psychologist
ONR Branch Office
536 S. Clark St.
Chicago, Illinois 60605

Psychologist
ONR Branch Office
Bldg. 114, Section D
666 Summer St.
Boston, Massachusetts 02210

Commanding Officer
ONR Branch Office
1030 E. Green St.
Pasadena, California 91106

Commanding Officer
ONR Branch Office
536 S. Clark St.
Chicago, Illinois 60605

Psychologist
ONR Branch Office
1030 E. Green St.
Pasadena, California 91106

Capt. Paul D. Nelson, MSC, USN
Director of Manpower & Facilities
   (Code 60)
Navy Medical R & D Command
Bethesda, Maryland 20014

Headquarters FORSCOM
ATTN: AFPR-HR
Ft. McPherson, GA   30330

Capt. H. J. M. Connery, MSC, USN
Navy Medical R & D Command
Bethesda, Maryland 20014

Colonel P. A. Wickwire, USMC
Assist. Chief of Staff, G-2/G-3
Marine Corps Recruit Depot
Parris Island, SC 29904

Superintendent (Code 1424)
Naval Postgraduate School
Monterey, CA 93940

Lt. Col. John Hopkins
USMC Base
Camp Pendelton, CA 93940

Professor John Senger
Operations Research & Admin. Science
Naval Postgraduate School
Monterey, CA 93940

Human Resource Management Detachment
Rota
Box 41
FPO New York 09540

Training Officer
Human Resource Management Center
Naval Training Center (Code 9000)
San Diego, CA 92133

Human Resource Management Center
Norfolk
5621-23 Tidewater Dr.
Norfold, VA 23511

Scientific Director
Naval Health Research Center
San Diego, California 92152

Human Resource Management Center
Building 304
Naval Training Center
San Diego, California 92133

Navy Personnel R&D Center
San Diego, California 92152

Office of Naval Research (Code 200)
Arlington, Virginia 22217

Commanding Officer
Naval Submarine Medical Research Lab.
Naval Submarine Base
New London, Box 900
Groton, Connecticut 06340

ACOS Research & Program Development
Chief of Naval Education & Training (N-5
Naval Air Station
Pensacola, Florida 32508

Commanding Officer
Naval Training Equipment Center
Technical Library
Orlando, Florida 32813

Human Resource Management School
Naval Air Station Memphis (96)
Millington, Tennessee 38054

NAMRL, NAS
Pensacola, Florida 32508

Bureau of Naval Personnel (Pers 65)
Washington, D. C. 20370

Lt. Rebecca G. Vinson, USN
Rating Assignment Officer
Bureau of Naval Personnel (Pers 5151)
Washington, D. C. 20370

Director, Human Resource Training Dep
Naval Amphibious School
Little Creek
Naval Amphibious Base
Norfolk, Virginia 23521

Chief of Naval Technical Training
Code 0161
NAS Memphis (75)
Millington, Tennessee 38054

Naval Material Command
Management Training Center (NMAT 09M32)
Room 150 Jefferson Plaza, Bldg. #2
1421 Jefferson Davis Highway
Arlington, Virginia 20360

Human Resource Management Center
Box 23
FPO New York 09510

Commanding Officer
HRMC Washington
1300 Wilson Blvd.
Arlington, Virginia 22209

Human Resource Management Detachment
Naples
Box 3
FPO New York 09521

Head, Research & Analysis Branch
Navy Recruiting Command (Code 434)
801 N. Randolph St., Room 8001
Arlington, Virginia 22203

Dr. William S. Maynard
U. S. Naval Academy
Department of Leadership & Law
Annapolis, Maryland 21402

Mr. Luigi Petrullo
2431 North Edgewood Street
Arlington, Virginia 22207

Scientific Advisor to the Deputy Chief
 of Naval Operations (Manpower,
 Personnel, and Training)
Office of the DCNO (MPT) (Op-01T)
2705 Arlington Annex
Washington, DC 20350

Head, Evaluation Section
Naval Military Personnel Command (N-6C)
Dept. of the Navy
Washington, DC 20370

Head, Research, Development, & Studies
 Branch
Office of the DCNO (MPT) (Op-102)
1812 Arlington Annex
Washington, DC 20350

Director, Research & Analysis Div.
Plans and Policy Department
Navy Recruiting Command (Code 22)
4015 Wilson Blvd.
Arlington, VA 22203

Headquarters U.S. Marine Corps
Code MPI-20
Washington, DC 20380

Director, NPRDC Washington Liaison
 Office
Building 200, 2N
Washington Navy Yard
Washington, DC 20374

Program Administrator for Manpower,
 Personnel, and Training
HQ Naval Material Command (Code 08D22)
1044 Crystal Plaza #5
Washington, DC 20360

Department of Administrative Sciences
Naval Postgraduage School
Monterey, CA 93940

Attn: Dr. Richard S. Elster

Director, Decision Support Systems Branch
Naval Military Personnel Command (N-164)
1818 Arlington Annex
Washington, DC 20370

Personnel Analysis Division
AF/MPXA
5C360, The Pentagon
Washington, DC 20330

Office of Commanding O-ficer
Navy Medical R & D Command
Bethesda, MD 20014

Office of the CDNO
Head, R, D, and S Branch (OP-102)
Washington, DC 20350

Office of the DCNO
Dir., HRM Plans and Policy Branch
OP-150
Washington, DC 20350

Commandant
Royal Military College of Canada
Kingston, Ontario
K7L 2W3

Attn: Dept. of Military
       Leadership & Management

Chief of Naval Technical Training
Code C161
NAS Memphis (75)
Millington, TN 38054

Dr. Donald Wise
MATHTECH, Inc.
PO Box 2392
Princeton, NJ 08540

Naval Material Command
Management Training Center (NMAT 09M32)
Room 150 Jefferson Plaza, Bldg. #2
1421 Jefferson Davis Highway
Arlington, VA 20360

Dr. Al Rhode
Information Spectrum, Inc.
1745 S. Jefferson Davis Highway
Arlington, VA 22202

Organizational Psychology Research Group
Office of Personnel Management
1900 E. Street, N.W.
Washington, DC 20415

Dr. Vincent Carroll
Univ. of Pennsylvania
Wharton Applied Research Center
Philadelphia, PA 19104

AFMPC/DPMYP
(Research and Measurement Division)
Randolph AFB, Texas 78148

Joseph J. Cowan
Chief, Psychological Research Branch
U. S. Coast Guard (G-P-1/2/62)
Washington, D. C. 20590

Air University Library/LSE 76-443
Maxwell AFB, Alabama 36112

Air Force Institute of Technology
AFIT/LSGR (Lt. Col. Umstot)
Wright-Patterson AFB, Ohio 45433

Bureau of Naval Personnel
Scientific Advisor (Pers Or)
Washington, D. C. 20370

Office of the Deputy Chief of Staff
for Personnel, Research Office
ATTN: DAPE-PBR
Washington, D. C. 20310

Bureau of Naval Personnel (Pers 6)
Assistant Chief of Naval Personnel
for Human Resource Management
Washington, D. C. 20370

Army Research Institute
5001 Eisenhower Ave.
Alexandria, Virginia 22333

Bureau of Naval Personnel (Pers 6a3)
Human Resource Management
Washington, D. C. 20370

ARI Field Unit - Leavenworth
P. O. Box 3122
Fort Leavenworth, Kansas 66027

Dr. Richard Morey
Duke University
Graduate School of Business
  Administration
Durham, North Carolina 27706

Commanding Officer
Naval Health Research Center
San Diego, CA 92152

Dr. Davis B. Bobrow
Bureau of Governmental Research
University of Maryland
College Park, Maryland 20742

Dr. A. F. K. Organski
Center for Political Studies
Institute for Social Research
University of Michigan
Ann Arbor, Michigan 48106

Dr. Michael A. Daniels
International Public Policy
  Research Corporation
6845 Elm Street, Suite 212
McLean, Virginia 22101

Dr. Thomas C. Wiegele
Northern Illinois University
Center for Biopolitical Research
DeKalb, Illinois 60115

Dr. George T. Duncan
Department of Statistics
Carnegie-Mellon University
Pittsburgh, Pennsylvania 15213

Drs. J. V. Gillespie and D. A. Zinnes
Indiana University
Center for International Policy Studies
Department of Political Science
825 East Eighth Street
Bloomington, Indiana 47401

Dr. Stephen S. Kaplan
The Brookings Institution
1775 Massachusetts Avenue, N.W.
Washington, D. C. 20036

Dr. Richard P. Y. Li
Michigan State University
Department of Political Science
East Lansing, Michigan 48824

Dr. Robert Mahoney
CACI, Inc.-Federal
1815 Fort Myer Drive
Arlington, Virginia 22209

Dr. Charles A. McClelland
University of Southern California
University Park
Los Angeles, California 90007

Dr. Harold W. Ward, M.D.
LCDR, MC, USNR
Head, Stress Medicine, Code 8040
Naval Health Research Center
San Diego, California 92152

Dr. P. Michael Maher, Ph.D.
Dean
College of Commerce
University of Saskatchewan
Saskatoon, Sask. S7N 0W0
Canada

Dr. James Price
Department of Sociology
University of Iowa
Ames, Iowa 50010

Dr. I. L. Goldstein
Department of Psychology
University of Maryland
College Park, Maryland 20740

Lt. Col. Stackpole USMC
Assist. Chief of Staff, G-2/G-3
Marine Corps Recruit Depot
San Diego, CA 92140

Dr. Lyman W. Porter, Dean
Graduate School of Admin.
University of California
Irvine, California 92664

Dr. Bruce Bell
Army Research Institute
5001 Eisenhower Ave.
Alexandria, VA 22333

Dr. Gary L. Kissler
NPDRC
Code 302
San Diego, California 92452

Dr. Lee Sechrest
Dept. of Psychology
Florida State Univ.
Tallahassee, FL 32306

Dr. Ismail A. Ghazalah
Institute for Research Studies
PO Box 247
Athens, OH 45701

Manager, Program in Manpower R & D
Code 450
Office of Naval Research
Arlington, VA 22217

Mr. Philip Bernard
B-K Dynamics
15825 Shady Grove Rd.
Rockville, MD 20850

Head, Manpower, Personnel, Training &
   Reserves Team (Op-964D)
Office of the Chief of Naval Operations
4A578, The Pentagon
Washington, DC 20350

Dr. Gerald Thompson
Graduate School of Industrial Adm.
Carnegie-Mellon Univ.
Pittsburgh, PA 15213

Assistant for Personnel Logistics
    Planning
Office of the CNO (Op-987P10)
5D772, The Pentagon
Washington, DC 20350

Dr. Richard Hatch
Decision Systems Associates, Inc.
350 Fortune Terrace
Rockville, MD 20854

Dr. Finish Welch
The Pacific Academy for Advanced Studies
1100 Glendon Ave., Suite 1625
Los Angeles, CA 90024

Mr. Ladd Greeno
A. D. Little, Inc.
Acorn Park, Lbdg. 35
Cambridge, MA 02140

Dr. Ben Morgan
Performance Assessment Laboratory
Old Dominion Univ.
Norfolk, VA 23508

Dr. Larry Cummings
Univ. of Wisconsin-Madison
Graduate School of Business
Center for the Study of Org. Performance
1155 Observatory Dr.
Madison, WI 53706

Dr. Arthur Stone
State Univ. of New York at Stony Brook
Dept. of Psychology
Stony Brook, NY 11794

Dr. Benjamin Schneider
Univ. of Maryland
Dept. of Psychology
College Park, MD 20742

Dr. Joseph Olmstead
Human Resources Research Org.
300 North Washington Str.
Alexandria, VA 22314

Technical Director
AFHRL/ORS
Brooks AFB, TX 78235

Dr. Edwin Locke
Univ. of Maryland
College of Business & Mgm. & Dept. Psy.
College Park, MD 20742

ARI Field Unit - Monterey
PO Box 5787
Monterey, CA 93940

Dr. Clayton P. Alderfer
Yale Univ.
School of Org. & Management
New Haven, CN 06510

Mr. Richard Lanterman
Chief, Psychological Research Branch
U.S. Coast Guard (G-P-1-2/62)
Washington, D.C. 20590

ATTN: Library
ARI Field Unit - USAREUR
c/o DCSPER
APO New York 09403

MAJ Robert Wiltrout
Mr. Richard Grann
U. S. Army Trimis-Evaluation Unit
Walter Reed Army Medical Center
Washington, D.C. 20012

Mr. Thomas N. Martin
Department of Administrative Sciences
College of Business and Administration
Southern Illinois University
Carbondale, Illinois 62901

Dr. H. Wallace Sinaiko
Program Director
Manpower Research & Advisory Services
Smithsonian Institution
801 North Pitt Street, Suite 120
Alexandria, Virginia 22314

Dr. Robert J. Anderson
MATHTECH, Inc.
P.O. Box 2392
Princeton, New Jersey 08540

Dr. Les Cohen
Information Spectrum, Inc.
1745 S. Jefferson Davis Highway
Arlington, Virginia 22202

Dr. Johnnie Daniel
Richard A. Gibboney Associates, Inc.
10605 Concord Street, Suite 203A
Kensington, Maryland 20795

Dr. Lawrence Friedman
University of Pennsylvania
Wharton Applied Research Center
Philadelphia, Pennsylvania 19104

Dr. Faris Kirkland
University City Science Center
Center for Social Development
3624 Science Center
Philadelphia, Pennsylvania 19104

Dr. Willaim H. Mobley
College of Business Administration
University of South Carolina
Columbia, South Carolina 29208

Scientific Information Officer
British Embassy - Room 509
3100 Massachusetts Avenue, N.W.
Washington, D. C. 20008

Dr. Meredith P. Crawford
Department of Engineering Administration
George Washington University
Suite 805
2101 L St., N.W.
Washington, D. C. 20037

Canadian Defense Liaison Staff,
  Washington
2450 Massachusetts Avenue, N.W.
Washington, D. C. 20008
ATTN: CDRD

Dr. John J. Collins
Vice President
Essex Corporation
201 North Fairfax Street
Alexandria, Virginia 22314

Dr. Robert C. Sapinkopf
Personnel Research and Development Center
U. S. Civil Service Commission
Washington, D. C. 20415

CDR William A. Earner
Management Department
Naval War College
Newport, Rhode Island 02840

Mr. Martin Milrod
Educational Equity Grants Program
1200 19th Street, N.W.
National Institute of Education
Washington, D. C. 20208

Librarian
Charles Myers Library
North East London Polytechnic
Livingstone House
Livingstone Road
Stratford
London E15 2LJ
ENGLAND

CAPT Richard L. Martin, USN
Commanding Officer
USS Francis Marion (LPA-Z49)
FPO New York 09501

CAPT Stan Polk
AFHRL/ORS
Brooks AFB, Texas 78235

CAPT Donald F. Parker, USN
Commanding Officer
Navy Personnel R&D Center
San Diego, California 92152

Dr. Eugene F. Stone
Assistant Professor of Administrative
   Sciences
Krannert Graduate School
Purdue University
West Lafayette, Indiana 47907

Dr. Myron M. Zajkowski
Senior Scientist
Naval Training Analysis and
   Evaluation Group
Orlando, Florida 32813

Mr. Mark T. Munger
McBer and Company
137 Newbury Street
Boston, Massachusetts 02116

Personnel Research and Development Center
U. S. Civil Service Commission
Bureau of Policies and Standards
Washington, D. C. 20415

Commandant
Royal Military College of Canada
Kingston, Ontario
K7L 2W3
ATTN: Department of Military
          Leadership and Management

HumRRO (ATTN: Library)
300 North Washington Street
Alexandria, Virginia 22314

National Defence Headquarters
Ottawa, Ontario
K1A OK2
ATTN: DPAR

Office of the Air Attache (S3B)
Embassy of Australia
1601 Massachusetts Avenue, N.W.
Washington, D. C. 20036

Dr. Richard T. Mowday
Graduate School of Management
   and Business
University of Oregon
Eugene, Oregon 97403

Dr. Arthur L. Korotkin
Vice-President and Director
Washington Office
Richard A. Gibboney Associates, Inc.
10605 Concord St., Suite 203A
Kensington, Maryland 20795

Dr. Robert D. O'Connor
Behavior Design, Inc.
P.O. Box 20329
Oklahoma City, Oklahoma 73156

Dr. Edward E. Lawler
Battelle Human Affairs Research Centers
4000 N.E., 41st Street
P.O. Box 5395
Seattle, Washington 98105

Dr. Thomas M. Ostrom
The Ohio State University
Department of Psychology
116E Stadium
404C West 17th Avenue
Columbus, Ohio 43210

Dr. Arie Y. Lewin
Duke University
Duke Station
Durham, North Carolina 27706

Dr. Manuel Ramirez
University of California at Santa Cruz
Clark Kerr Hall #25
Santa Cruz, California 95064

Dr. Ernest R. May
Harvard University
John Fitzgerald Kennedy
  School of Government
Cambridge, Massachusetts 02138

Dr. Irwin Sarason
Department of Psychology
University of Washington
Seattle, Washington 98195

Dr. Morgan W. McCall, Jr.
Center for Creative Leadership
P.O. Box P-1
Greensboro, North Carolina 27402

Dr. Saul B. Sells
Institute of Behavioral Research
Drawer C
Texas Christian University
Fort Worth, Texas 76129

Director
Program Management
ARPA, Room 813
1400 Wilson Blvd.
Arlington, Virginia 22209

Director
Cybernetics Technology Office
ARPA, Room 625
1400 Wilson Blvd.
Arlington, Virginia 22209

Dr. Earl A. Alluisi
Performance Assessment
    Laboratory
Norfolk, Virginia 23508

Dr. John P. French, Jr.
Institute for Social Research
University of Michigan
Ann Arbor, Michigan 48106

Dr. H. Russell Bernard
Department of Sociology
    and Anthropology
West Virginia University
Morgantown, West Virginia 26506

Dr. Paul S. Goodman
Graduate School of Industrial
    Administration
Carnegie-Mellon University
Pittsburgh, Pennsylvania 15213

Dr. Arthur Blaiwes
Human Factors Laboratory, Code N071
Naval Training Equipment Center
Orlando, Florida 32813

Dr. J. Richard Hackman
School of Organization and Managemer
Yale University
56 Hillhouse Avenue
New Haven, Connecticut 06520

Dr. Milton R. Blood
College of Industrial Management
Georgia Institute of Technology
Atlanta, Georgia 30332

Dr. Asa G. Hilliard, Jr.
The Urban Institute for
    Human Services, Inc.
P.O. Box 15068
San Francisco, California 94115

Dr. David G. Bowers
Institute for Social Research
PO Box 1248
University of Michigan
Ann Arbor, Michigan 48106

Ms. Kristen Hinsdale
Vice-President, Research & Development
Validated Instruction Associates, Inc.
PO Box 386
Albion, Michigan 49224

Dr. Joseph V. Brady
The Johns Hopkins University
 School of Medicine
Division of Behavioral Biology
Baltimore, Maryland 21205

Dr. Edwin Hollander
Dept. of Psychology
State University of New York at Buffalo
430 Ridge Lea Road
Buffalo, New York 14226

Ross R. Vickers, Jr.
CODE 8040
Dept. of the Navy
Naval Health Research Center
San Diego, CA 92152

Dr. Charles L. Hulin
Dept. of Psychology
University of Illinois
Champaign, Illinois 61820

Dr. Norman G. Dinges
The Institute of Behavioral Sciences
250 Ward Avenue - Suite 226
Honolulu, Hawaii 96814

Dr. Rudi Klauss
Syracuse University
Public Administration Dept.
Maxwell School
Syracuse, New York 13210

Dr. Judi Komaki
Georgia Institute of Technology
Engineering Experiment Station
Atlanta, Georgia 30332

Dr. D. M. Nebeker
Navy Personnel R & D Center
San Diego, CA 92152

Dr. Terence R. Mitchell
School of Business Administration
University of Washington
Seattle, Washington 98195

Dr. Richard Steers
Graduate School of Management
    and Business
University of Oregon
Eugene, Oregon 97403

Dr. John M. Neale
State University of New York
    at Stony Brook
Department of Psychology
Stony Brook, New York 11794

Dr. James R. Terborg
University of Houston
Department of Psychology
Houston, Texas 77004

Dr. Howard M. Weiss
Purdue University
Department of Psychological Sciences
West Lafayette, Indiana 47907

Dr. Philip G. Zimbardo
Stanford University
Department of Psychology
Stanford, California 94305

AFOSR/NL (Dr. Fregly)
Building 410
Bolling AFB
Washington, D. C. 20332

Dr. A. L. Slafkosky
Code RD-1
HQ U.S. Marine Corps
Washington, D. C. 20380

Military Assistant for Human Resources
OAD (E&LS) ODDR&E
Pentagon 3D129
Washington, D. C. 20301

Commandant of the Marine Corps
(Code MPI-20)
Washington, D. C. 20380

NPRDC Library, Code P201L
San Diego, CA 92152

Attn: M. McDowell

Program Director
Manpower Research and Advisory Services
Smithsonian Institution
801 North Pitt Str.
Alexandria, VA 222314

Navy Military Personnel Command
HRM Dept. (NMPC-6)
Washington, DC 20350

Dr. Richard Cooper
RAND Corporation
1700 Main Street
Santa Monica, CA 80406

Center for Management and
 Organizational Research
Research Division
College of Business Administration
University of South Carolina
Columbia, South Carolina 29208